Remarks

Claims 1-20 are pending.

Claims 1-20 stand rejected.

Claim 21 is added.

Claims 1-21 are submitted herein for review.

No new matter has been added.

Applicant begins by noting that new claim 21 is added claiming that the electric field control material is a non-linear material. This claim is supported at least by page 5, lines 9-17 of the specification. Separately, claim 1 was amended to remove the term "so-called" for definiteness purposes.

Turning to the prior art, the Examiner has removed the prior rejection but now rejects claims 1-20 under 35 U.S.C. §§ 102(e) and 103(a) over the newly cited Siegel (U.S. Patent No. 7,923,500) as evidenced by the an evidentiary reference (ZnO tech sheet -nanophase Technologies). Applicant respectfully disagrees with the Examiner's assertion and submits the following remarks in response.

Independent claim 1 is directed to an electric field control material including a polymer matrix in which is dispersed a non-linear filler having non-linear electric resistance properties, where the non-linear filler includes at least 97% by weight of zinc oxide as a homogeneous powder, and less than 3% by weight of at least one metal oxide as traces.

As noted in the prior Amendment this arrangement of a non-linear type filler with its corresponding non-linear electric resistance properties provides an electrical field control material which is less expensive and is produced less restrictively than other prior electric field control materials, while providing a significantly improved breakdown resistance. As noted on page 5, lines 9-17 of the specification, the homogeneity of the ZnO distribution is a relevant factor for the electrical properties of the material as a whole.

In forming the rejection of independent claim 1, the Examiner argues that Siegel teaches all of the elements of the claim. Office Action at pgs 2-3.

Applicant submits that Siegel discloses nanocomposite including filler distributed heterogeneously in a polymer matrix. In Example 1 according to Siegel, ZnO nanoparticles come from Nanophase Technologies Corporation. According to the corresponding data sheet referred to by the Examiner, the ZnO particles have a purity of more than 99%. However, the data sheet does not teach that the ZnO is a non-linear filler.

Furthermore, figure 1 of Siegel shows electrical resistivities of LDPE/ZnO composites as a function of ZnO content under an applied filed strength of 10 kV/cm. Data from samples with homogeneous and heterogeneous filler distribution are shown (see col. 2, lines 64-67), showing that Siegel is only focused on heterogeneous distribution properties of ZnO. Siegel is silent about the type of homogeneous filler distribution used in figure 1. The Siegel reference does not teach that its homogeneously distributed ZnO are non-linear fillers. In view of the teaching of Siegel, one of ordinary skill in the art would be prompted to add heterogeneously distributed filler, instead of homogeneously distributed filler as claimed in claim 1, since the desired results

between Siegel and the present arrangement are different.

As such, the cited prior art does not teach or suggest all of the elements of claim 1. For example, the cited prior art of Siegel does not teach or suggest an electric field control material with a non-linear filler dispersed in a polymer matrix where the non-linear filler has non-linear electric resistance properties and where the non-linear filler includes at least 97% by weight of zinc oxide as a homogeneous powder.

For at least this reason, Applicant requests that this rejection of claim 1 be withdrawn. As claims 2-21 depend from claim 1, these claims should be allowed for at least the same reason.

Separately, regarding dependent claim 12, the Examiner has independently rejected this claim over Siegel under 35 U.S.C. § 103 as outlined in paragraph 5 on page 3 of the Office Action. Claim 12 is directed to the feature where the zinc oxide has a direct current resistivity which is less than $10^9\ \Omega.m$.

In the Office Action the Examiner has argued that "...the ZnO particles in the claimed material appear to be inherently met by the ZnO particles in the teaching of Siegel." Applicant respectfully disagrees with this assessment. Such a characteristic depends on the nature of ZnO, and the teaching of Siegel as well as the data sheet from Nanophase Technologies Corporation do not disclose that the zinc oxide has a direct current resistivity which is less than $10^9\ \Omega.m$. Such a characteristic is not a mere design choice but is particularly relevant when the material of the present invention is used in medium or high voltage power cable.

For at least this additional reason, Applicant requests that this rejection of dependent

claim 12 be withdrawn. As claims 2-21 depend from claim 1, these claims should be allowed for at least the same reason.

In view of the foregoing, Applicant respectfully submits that pending claims 1-21 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application she is invited to contact the undersigned at the number listed below.

Respectfully submitted,

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